

SN.10/766,535

ATTORNEY DOCKET NO. FUJI:288

REMARKS

Claims 1, 3, 6-11, 13, 16-18, and 20-24 are now pending in this application for which applicants seek reconsideration.

Amendment

Claims 2, 4, 5, 12, 14, 15, and 19 have been canceled and claims 1, 3, 6, 7, 11, 13, 16-18, 20, and 21 have been amended. Independent claims 1, 11, and 18 have been amended to incorporate part of claims 3, 13, and 20, respectively, to more clearly define over the applied reference. Moreover, independent claims 1 and 11 have been amended to incorporate the subject matter of claims 5 and 15, respectively, to overcome the double patenting rejection. Claims 6, 7, 16, 17, and 21 have been amended to depend from the remaining pending claims. Independent claims 1, 11, and 18 have been further amended to emphasize the structure already contained therein, namely that the Cr-Mn alloy thin film is sandwiched between the two nonmagnetic underlayers so that it does not contact the magnetic recording layer. No new matter has been introduced.

Double Patenting Rejection

Claims 1-3 and 10-13 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 4-6 of co-pending application SN. 10/436,249. As independent claims 1 and 11 now incorporate the subject matter of claims 5 and 15, which are not subject to the double patenting rejection, applicants submit that this rejection has been overcome.

Art Rejection

Claims 1, 2, 4, 6, 8-12, 14, 16, 18, 19, 21, and 23 were rejected under 35 U.S.C. § 102(b) as anticipated by Lambeth (USP 5,993,956), and claims 3, 5, 7, 13, 15, 17, 20, 22, and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Lambeth. Applicants traverse these rejections at least to the extent that independent claims 1, 11, and 18 now include part of the subject matter of claims 3, 13, and 20, respectively, not taught by Lambeth. As the present

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amendment overcomes the anticipation rejection, only the rejection based on § 103 remains at issue.

First, applicants submit that Lambeth would not have taught making its Mn containing layer 14 thinner than 3 nm. Indeed, Lambeth would not have enabled a Cr-Mn layer having a thickness of 2.5 nm as Lambeth explicitly discloses a Cr-Mn layer having a thickness of at least 3 nm. While Lambeth also mentions that one of ordinary skill in the art can produce a thinner Cr-Mn layer, Lambeth also states that there may be a minimum effective amount of Mn that can be added to the magnetic media structure below which the enhanced magnetic properties will not be observed. Lambeth thus does not provide an enabling disclosure for achieving a Cr-Mn layer having a thickness as small as 2.5 nm. As 2.5 nm is outside the scope of Lambeth, applicants submit that Lambeth would have taught away from achieving a 2.5 nm thickness.

Second, as originally set forth in independent claims 1, 11, and 20, the Cr-Mn layer is provided or sandwiched between the two underlayers. That is, the Cr-Mn layer does not contact the magnetic recording layer formed on the underlayer structure. Rather, one of the underlayers, which do not contain Mn, contacts the magnetic recording layer. Lambeth indeed discloses (see Fig. 1b) that an intermediate layer 22, which can be the same material as the underlayer 20, can be disposed between the Mn containing layer 14 and the magnetic layer 16. See column, 5, lines 66-67, column 9, lines 5-20, and column 12, lines 38-45. Nonetheless, Lambeth specifically teaches that providing an intermediate layer between the Mn containing layer 14 and the magnetic layer 16 is not desirable. See column 6, lines 13-17, column 9, lines 16-20. Indeed, Lambeth explicitly teaches placing the Mn containing layer 14 in contact with the magnetic layer 16 so that Mn can diffuse to the grain boundaries of the crystallites of the magnetic layer 16 to provide a magnetic media 10 having the desired magnetic properties. See column 6, lines 18-27. In this respect, Table 3 of Lambeth is telling. When the intermediate layer 22 is used, the coercivity of the magnetic layer 16 becomes worse as compared to when no such intermediate layer 22 is used. See column 12, lines 11-14.

Further, Lambeth discloses that a very thin non-Mn containing layer 22 can be placed between the Mn-containing layer 14 and the magnetic layer 16 to act as a diffusion moderating barrier layer to limit and control the diffusion rate of Mn from the Mn containing layer 14 to the

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magnetic layer grain boundaries of the magnetic layer. See column 12, lines 38-45. However, if such a diffusion moderating barrier layer is used, the Mn containing layer would have to be sufficiently thicker. Given Lambeth's disclosure that the thickness of the Mn containing layer 14 is preferably at least 3 nm and more preferably greater than 10nm, Lambeth would have taught away from using a Mn containing layer that is thinner than 3nm when such a diffusion moderating barrier layer is used, or alternatively would have taught away from using an intermediate (diffusion moderation) layer 22 to keep the Mn containing layer 14 on a thinner side.

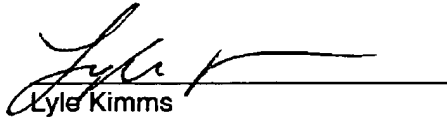
In short, Lambeth would have taught away from the present invention where the Mn containing layer is not in contact with the magnetic recording layer while having the thickness of the Mn containing layer at 0.5-2.5nm.

Conclusion

Applicants submit that claims 1, 3, 6-11, 13, 16-18, and 20-24 patentably distinguish over the applied reference and are in condition for allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicants urge the examiner to contact the undersigned to expedite prosecution.

Respectfully submitted,

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February 17, 2005
Date